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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/725,622	12/02/2003	Stefan Assmann	P03,0479	4948

7590 11/17/2006

SCHIFF HARDIN & WAITE

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EXAMINER

SOLANKI, PARIKHA

ART UNIT	PAPER NUMBER
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3737

DATE MAILED: 11/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/725,622

Applicant(s)

ASSMANN ET AL.

Examiner

Parikha Solanki

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 December 2003.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-12 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 1/30/06.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

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DETAILED ACTION

Priority

1. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). Receipt is acknowledged of certified papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 1/30/06 was filed after the mailing date of the instant application on 12/2/06. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Drawings

3. The drawings are objected to because they are informal. Examiner recommends that Applicant replace handwritten portions with formal, typed drawings. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

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Claim Objections

4. Claim 9 objected to because of the following informalities: the claim contains a typographical error. Line 4 of claim 9 recites "an art cycle of said subject". Applicant does not provide the definition of an art cycle in the preceding claims or in the written disclosure, and this term is not commonly known in the art. Examiner assumes that the claim is intended to read "a heart cycle of said subject," in view of the disclosures in lines 9-10 of the specification of the instant application. For the remainder of this Office Action, Examiner will base prosecution of claim 9 upon this assumption. Examiner recommends that Applicant replace the phrase "an art" in claim 9 with "a heart," "a cardiac," or a similar modification thereof. Appropriate correction of claim 9 is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1, 4-6, 9, 11 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Dumoulin et al (European Patent Application No. 375,314).

Regarding claims 1, 4-6 and 9, Dumoulin ('314) discloses a method for simultaneously obtaining a three-dimensional nuclear magnetic resonance image of fluid flow during a movement cycle in a selected sample region and a three-dimensional magnetic resonance image of stationary tissue in the same region of a living subject, including steps for superimposing the time-corresponding stationary and flow image in a composite image (Abstract, p. 2 lines 46-48, p. 7 line 49 – p.8 line 1). The fluid flow image of Dumoulin ('314) is the same as the speed-resolved image described in the instant application. Dumoulin ('314) includes steps for applying phase-encoded gradients to the magnetic field during the imaging procedure so as to acquire images with fluid movement information, which is the same as the speed-resolved image claimed in the instant application (p. 7 lines 19-48). Dumoulin ('314) further provides a step for color-coding the data in the fluid flow image to indicate flow direction (p. 8 lines 1-5). Dumoulin ('314) discloses this imaging method for the purpose of obtaining angiographic images (Abstract line 1). By definition, angiographic imaging is performed

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over the duration of a heart cycle. At the time of invention, state of the art nuclear magnetic resonance imaging methods inherently produced cine images, equivalent to the movie of claim 6 of the instant application.

Regarding claim 6, Dumoulin ('314) states that the entire imaging method may be applied to a series of two-dimensional images of the same selected region, which constitutes a movie as claimed in the instant application (Figs. 3 & 4a).

Regarding claim 7, Dumoulin ('314) discloses that the method of imaging is applied to angiographic imaging of fluid flow, which is the same as manually identifying the region to be imaged as claimed in the instant application (Fig. 4b, Abstract).

Regarding claim 8, Dumoulin ('314) discloses that a plurality of two-dimensional image data sets from adjacent anatomical slices is acquired to form a composite three-dimensional image, where each two-dimensional image contains fluid flow information, and where the two-dimensional image sets are the same as the plurality of regions within a selected region as claimed in the instant application (Figs. 3 & 4a).

Regarding claims 11 and 12, Dumoulin ('314) provides an imaging system including a magnetic resonance scanner, a control computer, a display screen, a control computer, and a computer program loadable onto a computer-readable medium capable of simultaneously acquiring data for and displaying images of stationary tissue and flowing fluid in the same selected region of a living subject (Figs. 5-10, p. 8 lines 20-58).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dumoulin (European Patent Application No. 375,314), in view of Applicant's admitted prior art. Dumoulin ('314) discloses all features of the present invention as described in paragraph 5 of this Office Action, with the exception of discussing image segmentation. Applicant provides that segmentation of medical images is well-known in the art, on page 4, line 20 of the specification of the instant application. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to include

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commonly-known image segmentation techniques in the method of Dumoulin ('314), in order to better distinguish the anatomical areas of interest from the background of the acquired image.

9. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dumoulin (European Patent Application No. 375,314). Dumoulin ('314) discloses all features of the invention claimed in claim 1 of the instant application, as described in paragraph 5 of this Office Action. Dumoulin ('314) does not explicitly state that 20 images are acquired per movement cycle. Examiner takes official notice that it is well known in the art to acquire at least 20 images during the cardiac cycle of the patient, in order to obtain an accurate and comprehensive set of image data representing the changes in blood flow during a cardiac cycle.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Dumoulin et al (US Patent No. 4,918,386) teach a related method of simultaneously imaging blood flow with stationary tissue. Cline et al (US Patent No. 5,204,625) provide a related method of segmenting stationary vascular images. Pelc et al (US Patent No. 5, 257, 625), Ehnholm et al (US Patent No. 5, 315, 250) and Alley et al (US Pat. No. 6, 185, 447) show that state of the art NMR imaging systems and methods generate cine images.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Parikha Solanki whose telephone number is 571.272.3248. The examiner can normally be reached on M-F, 8 - 4:30pm.

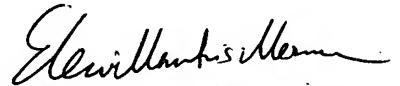
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Casler can be reached on 571.272.4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Parikha Solanki
Examiner – Art Unit 3737



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